CSC TTC Subsystem

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CSC TTC subsystem: Overview

CSC = Cathode Strip Chamber subsystem of Muon Spectrometer

- **1st precision measurement in forward & backward directions** ($|\eta| > 2$)
- **mounted on "small wheel"; operates in high-radiation environment**

Two TTC partitions

- **Forward & Backward (or "A" and "C")**

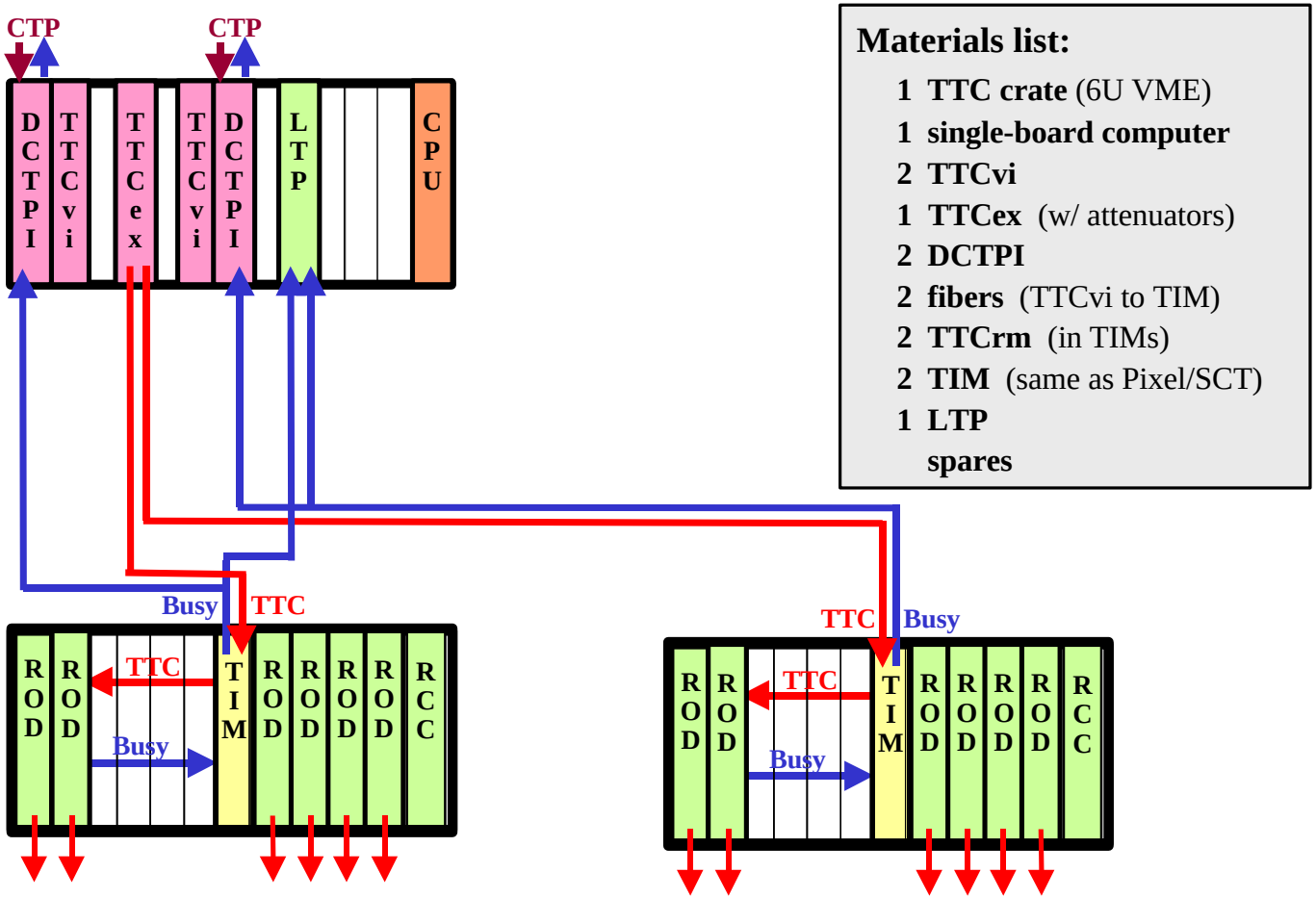
Each partition:

- **1 ROD crate w/ 16 RODs** (8 initial + 8 staged) **+ 1 TIM** (Timing Interface Module)
- **distribution of timing, trigger, and control signals:**
  - **CSC TTC crate to TTCrx in TIM via fiber** (standard TTC protocol)
  - **TIM to RODs via backplane** (special protocol)
  - **RODs to chamber-mounted signals via fiber** (clock & readout control signals only)
- **collection of Busy signals:**
  - **RODs to TIM via backplane**
  - **TIM to Busy module in CSC TTC crate via cable**

Standalone operation for electronics calibration:

- **TIM provides all control signals required for electronics calibration**
- **RODs collect and reduce calibration data**

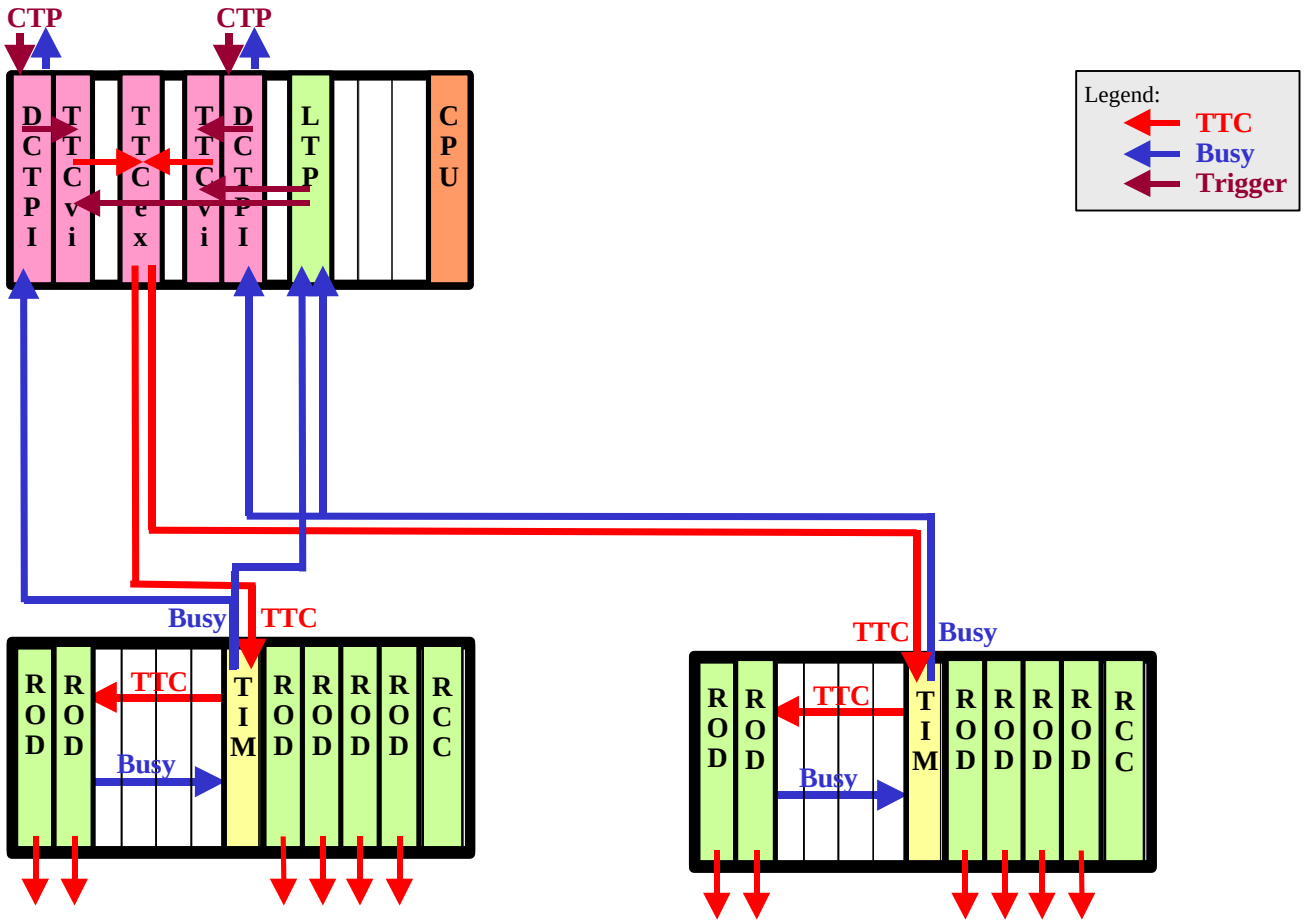
CSC TTC subsystem: Layout of TTC modules



Materials list:

- 1 **TTC crate** (6U VME)
- 1 **single-board computer**
- 2 **TTCvi**
- 1 **TTCex** (w/ attenuators)
- 2 **DCTPI**
- 2 **fibers** (TTCvi to TIM)
- 2 **TTCrm** (in TIMs)
- 2 **TIM** (same as Pixel/SCT)
- 1 **LTP**
- **spares**

CSC TTC subsystem: Principal TTC paths



CSC TTC subsystem: Production quantities & schedules

Production quantities:

- **1 TTC crate**
- **1 single-board computer for TTC crate**
- **2 TTCvi modules**
- **1 TTCex module**
- **2 DCTPI modules**
- **1 LTP module**
- **2 fibers**
- **2 TTCrm** (in TIMs)
- **2 TIM modules** (**+1** for test bench)
- **spares**

Schedule (all dates very approximate):

- **1st modules for use during development: useful 2Q03; needed 3Q03**
  - **could be 1st production unit, a prototype, or a module on loan**
- **remainder of modules for production system: useful 1Q04; needed 3Q04**

Questions

TTC crate:

- **Is our understanding of requirements in TTC crate correct?**
  - **1 TTCex services two TTC partitions (A: yes)**
  - **1 TTCvi required per TTC partition (A: yes)**
  - **1 DCTPI required per TTC partition (A: yes)**
- **Software in TTC crate:**
  - **Who writes "standard" software for configuration & control in TTC crate CPU? (A: part of ROD crate DAQ)**
  - **Is there any "non-standard" software required in TTC crate CPU? (A: unknown)**
- **Does some common development of LTP** (local trigger) **modules make sense? (A: will be investigated)**

DCTPI: Who provides DCTPI? (A: LVL1 group)

TIM: Does TIM provide local Busy logic for standalone operation? (A: yes)

Spares: Who is responsible for spare modules? (A: LVL1 group)

Will there be a pool of spare modules shared by all detectors? (A: yes)